water-level and end in a form of steam nozzle. The steam tubes are surrounded by circulating tubes which extend from the bottom of the accumulator to the water-level. The steam issuing from the nozzles causes a rapid circulation of the water, thereby ensuring that the whole bulk of the water is effectively utilized. At the same time the arrangement provides an efficient means of condensing the surplus steam. The openings at the top of the circulating tubes are all arranged in one direction, so that a current is set up which forces all oil and floating impurities towards the end of the accumulator into a collecting chamber from which the oil is drained away. This arrangement enables separate oil separators to be dispensed with.

A by-pass valve is fitted between the engine exhaust and turbine inlet pipes, so loaded as to open when a sudden rush of steam occurs, and thereby avoiding any undue rise of back pressure against the engines. The accumulator requires to be effectively lagged to reduce radiation losses to a minimum. The size of an accumulator of a given type and to deal with a given mean steam quantity depends on the rate of fluctuation of the steam supply and the length of time during which regeneration has to take place, i.e. the period during which the steam supply rises or falls below the rate of demand from the turbine.

Mixed-pressure Turbines.—An accumulator designed to bridge over periods of stoppage of several minutes becomes excessive in size and cost, and if, as frequently happens, the load on the turbine is maintained over prolonged periods, during which no exhaust steam supply is available, it is necessary for a live steam supply to be admitted to the turbine through a reducing valve. This method of working is inefficient, and led to the introduction of mixed-pressure turbines, which have largely taken the place of exhaust turbines. A mixed-pressure turbine consists of an exhaust turbine and an auxiliary high-pressure turbine within one casing, and in practice it takes the shape of a standard high-pressure turbine with an enlarged low-pressure end.

In comparison with an exhaust-steam turbine, a mixed-

pressure turbine is naturally somewhat lower in efficiency under equal conditions for equal blading, below atmospheric pressure stage when working on low-pressure steam, as the high-pressure stages are rotating without doing useful work, and consume power in the shape of windage losses. The capital cost is naturally also somewhat higher. The advantage of running more efficiently when no exhaust steam is available or when the supply of exhaust steam is insufficient to meet the load on the turbine usually more than compensates for these disadvantages.

Properly to perform the regulation of the steam supply to a mixed-pressure turbine calls for a valve gear to meet the following requirements.

First, it should allow the turbine to utilize all available low-pressure steam before admitting high-pressure steam.

Second, its operation should not interfere with the running speed of the turbine and vice versa.

These conditions are fully met by designs based on Professor Rateau's